NATURAL RESOURCES CONSERVATION SERVICE
MONTANA CONSERVATION PRACTICE SPECIFICATION

BRUSH MANAGEMENT (ACRE)

CODE 314

DEFINITION AND PURPOSE: The work will consist of removal, reduction, or manipulation of non-herbaceous plants.

PLANNING AND GENERAL REQUIREMENTS: All brush management practices in Montana have the potential to impact wildlife habitat. All brush management plans should be made in consultation with Montana Fish, Wildlife and Parks, and other appropriate partner agencies.

Where the present canopy cover of conifers (13-feet tall or taller) is less than 25%, use brush management practices to remove unwanted or encroaching trees. In areas where the present canopy cover of conifers (13-feet tall or taller) is 25% or greater, use practice code 666 – Forest Stand Improvement. Practice code 666 may also be used on rangelands where present canopy cover is less than 25% if the producer has a forest management objective for that area.

On native rangeland areas, brush management practices will be used to remove unwanted and encroaching woody vegetation. Brush species density and composition will be allowed as per what is has been identified for the site in the reference state.

It is the responsibility of the owner to obtain all necessary permits and/or rights, and to comply with all regulations and laws pertaining to the installation of this practice. On federal, state or tribal lands, the landowner/leasee must have clearances and approvals or permits from the responsible permitting agency prior to any implementation.

For federally-funded practices, the area of potential effect for each undertaking must be investigated for cultural resources under Section 106 of the National Historical Preservation Act (1966), as amended, before soil disturbance occurs.

For federally-funded practices, the NRCS must determine if installation of this practice will affect any federal, tribal or state-listed threatened or endangered species or their habitat prior to application or construction. If this action may affect a listed species or result in modification of critical habitat, the NRCS will advise the land user of the requirements of the Endangered Species Act and recommend alternative conservation treatments that avoid adverse effects. Further assistance will be provided only if the land user selects one of the alternative conservation treatments for installation; or at the request of the landowner, the NRCS may initiate consultation with the U. S. Fish and Wildlife Service. Any special requirements for endangered species are shown under Special Requirements.

For federally-funded practices, if during installation, any cultural resources, historical resources, threatened or endangered species are found, the landowner/leasee agrees to stop all work and immediately notify the NRCS.

Brush management may be applied to the following species:

1. Native Species

Ponderosa pine	*Pinus ponderosa*
Rocky Mountain juniper	*Juniperus scopulorum*
Fringed sagewort	*Artemisia frigida*
Big sagebrush	*Artemisia tridentata*

Silver sagebrush	*Artemisia cana*
Western or common snowberry	*Symphoricarpos occidentalis* or *S. albus*
Douglas Fir	*Pseudotsuga menziesii*
Plains pricklypear	*Opuntia polyacantha*
Broom snakeweed	*Gutierrezia sarothrae*
Rabbitbrush spp.	*Chrysothamnus spp.* or *Ericameria spp.*

2. Introduced Species

Russian olive	*Elaeagnus angustifolia*
Tamarisk	*Tamarix spp.*

Species not contained in the above list may be treated after consultation and approval of the state resource conservationist.

I. TREATMENT METHODS:

A. Chemical Treatment

Specifications for the kind of chemical, methods, and time of application will be in accordance with the herbicide label and the latest edition of *Montana, Utah, Wyoming Weed Management Handbook,* Cooperative Extension Services, Montana State University. Amount of chemical will not exceed the label but may be less than the label if published in the above reference.

Dates of chemical application must coincide with the proper growth stage(s) of the target species.

Diesel carriers may be used for spot treatment applications including stump painting with chemical and diesel mixes, or straight diesel. Due to potential negative impacts on wildlife and other resources, diesel will not be used alone or in combination with other chemicals when the method used is a broadcast spray application (ground or aerial).

Aerial Application -- Flight must be low enough to obtain proper distribution and coverage and be made when wind velocities are low enough to prevent drift into sensitive areas. Where water is used as a carrier, commercial wetting agents will be used according to manufacturer's recommendations.

Caution cooperators using chemical herbicides as follows: If pesticides are handled or applied improperly, or if unused portions are not disposed of safely, they may be injurious to humans, domestic animals, desirable plants, and fish or other wildlife, and they may contaminate water supplies. Drift from aerial spraying can contaminate nearby crops and other vegetation. Follow the directions and heed all precautions on the container label.

Specific treatments will address the rate of application or spray volume; acceptable dates of application; mixing instructions (if different from label instructions), and; special application techniques necessary.

Reference Field Office Technical Guide (FOTG), Section IV–Practice Standards and Specifications, 595–Pest Management.

B. Mechanical Treatment

Equipment will consist of mowers, choppers, beaters, bulldozers, blades, rails, chains, or other suitable equipment, as appropriate to the site and target species. The optimum season or date(s) for the treatment selected will be outlined in the specification. Erosion protection needed during and after treatment will be addressed. Specific treatments will list the techniques or procedures to be following, including the handling of residue.

C. Biological Treatment

Grazing with alternative kinds of livestock, particularly browsers such as sheep or goats during critical growing stages of target plants, can be effective control for certain species. The hoof action associated with winter-feeding of livestock may also effectively reduce some brush species. Host-specific insects may be beneficial to reduce some brush species. Specifications for biological treatment will be developed based on the individual problems of the area, and available research data. Specific treatments will address the kind of biological agent or grazing/browsing animal to be used; timing, duration and intensity of grazing or browsing; desired degree of grazing or browsing use for effective control of target species; maximum allowable degree of use on desirable non-target species, and; special precautions or requirements when using insects or plants as control agents.

D. Prescribed Burning Treatment

Treatments will be conducted in accordance with FOTG, Section IV–Practice Standards and Specifications, 338–Prescribed Burning, and all federal, state, tribal, and local laws and regulations.

II. SPECIES SPECIFIC TREATMENT RECOMMENDATIONS:

A. Native Species

Ponderosa Pine: The preferred method of controlling pine encroachment is prescribed burning. Burning prior to the time trees reach a height of six feet will provide excellent control, ensure adequate fine fuels, and reduce hazards associated with prescribed fire in a least cost manner.

Mechanical methods such as cutting individual trees or dozing are effective but more labor and cost intensive. Chemical methods are also available but primarily are cost prohibitive.

The thinning of Ponderosa pine to commercial timber production, where applicable, may provide additional income while maintaining the desirable understory vegetation. See FOTG, Section IV–Practice Standards and Specifications, 666–Forest Stand Improvement.

Rocky Mountain Juniper: The preferred method of controlling juniper encroachment is prescribed burning. Burning prior to the time trees reach a height of five feet will provide excellent control, and ensure adequate fine fuels to carry a fire, which is a problem in older stands of juniper.

Mechanical methods such as cutting individual trees, dozing, chaining, and cabling are effective but labor and/or cost intensive. Chemical methods are also available but are generally less cost effective than prescribed burning.

USE CAUTION WHEN PLANNING FOR THE FOLLOWING SPECIES: High density, canopy cover, or production of the following species is often indicative of improper grazing management sometime in the past. Control treatments should only be applied if prescribed grazing is planned to assure the success of treatment, and the desired plant community following treatment. Native brush species provide valuable food and cover for wildlife, and the potential impacts to wildlife species of concern must be addressed in the plan before applying treatment.

Fringed sagewort: Chemical control is preferred due to this species' ability to sprout from roots and plant bases following burning or mechanical treatment. Utilizing alternative grazing animals such as sheep and goats can be effective in controlling this species.

Big sagebrush: Prescribed burning is the preferred least cost control method. Grazing deferment for one to two years prior to burning may be needed to ensure adequate fine fuel accumulation.

Chemical control is effective if burning is not possible. Correct timing of treatments is important to assure best control, and to lessen impacts to non-target species.

Utilizing alternative grazing animals such as sheep and goats can be effective in controlling this species.

Mechanical methods such as chaining or cabling are not as effective, are higher cost, and cause soil disturbance.

When planning for sagebrush dependent wildlife species, additional planning guidance can be found in the *Montana Final Sage Grouse Management Plan, 2005*.

Silver sagebrush: Chemical control is preferred due to this species' ability to sprout from roots and plant bases following burning or mechanical treatment. Utilizing alternative grazing animals such as sheep and goats can be effective in controlling this species.

Plains pricklypear: Chemical control methods generally produce the best control. Dense stands can be reduced by blading in the dormant season just below the soil surface into windrows. Windrows must be turned the following year to prevent bladed pads from re-establishing. Expect no more than 75-80% reduction after five years.

Broom snakeweed: This species is cyclical in its occurrence, so feasibility of treatment must be carefully considered. Prescribed burning is the most effective and least cost treatment. Chemical control is effective if burning is not possible.

Rabbitbrush spp.: Chemical control is preferred due to this species' ability to sprout from roots and plant bases following burning or mechanical treatment.

Western or common snowberry: Utilizing alternative grazing animals such as sheep and goats can be effective in controlling this species. Intensive prescribed grazing with cattle directly within colonies of this species will provide adequate control. Hoof action associated with winter-feeding may also be effective. Chemical methods are effective as this species has the ability to sprout from roots and plant bases.

B. Introduced Species:

Russian olive: Chemical control methods generally produce the best control. Mechanical methods such as cutting individual trees, dozing, and cabling are effective but labor and cost intensive. Stumps of individually sawn trees should be chemically treated to prevent sprouting. Control is most effective where trees are less than five feet in height. Plants may sprout after burning.

Submergence in water where feasible for 28 months will reduce light to moderate stands. Inundate plants for one entire growing season, and over half of the next two growing seasons.

Tamarisk: This species is an aggressive sprouter. Effective control of medium to heavy stands can be accomplished by chemical treatments or a combination of root plowing, burning and chemicals. Cutting down tamarisk and treating the stump with herbicides such as imazapyr (trade name Arsenal) is very effective but is labor intensive Root plow 12 to 18 inches below soil surface. Pile and burn vegetation to prevent re-sprouting. Follow-up with chemical treatments on regrowth.

Submergence in water where feasible for 28 months will reduce light to moderate stands. Inundate plants for one entire growing season, and over half of the next two growing seasons.

III. MANAGEMENT FOLLOWING TREATMENT:

If chemical methods of treatment are used, all label restrictions concerning grazing, haying, or other uses will be applied.

If the area is grazed by livestock, the treatment area will be deferred from livestock grazing for the entire growing season(s) for a minimum of two years following the treatment. Additional periods of livestock deferral may be needed prior to treatment application based on the treatment method used.

Drought following treatment, low vigor of desirable grasses, invasion of the treated area by undesirable plants, and/or other abnormal conditions may make it desirable to extend the deferment beyond the above requirements. If any of these conditions exist, the NRCS conservationist will inform the cooperator of required extended additional deferment periods.

The manner in which the forage species will be grazed following the deferment period will be in accordance with specifications for FOTG, Section IV–Practice Standards and Specifications, 528–Prescribed Grazing. The land user will be required to follow vegetation utilization standards and improve and or maintain proper rangeland health in order to aid in the success of the practice. Proper utilization and improved rangeland health will reduce the risk of further brush encroachment.

IV. OPERATION AND MAINTENANCE:

This conservation practice is an asset to your farm or ranch. This practice will need periodic operation and maintenance to maintain satisfactory performance. The life of this practice or system is at least 10 years. The life of this practice can be assured or extended by thorough and timely operation and maintenance. Some recommendations to help you develop a successful operation and maintenance program include:

- Following initial application, some regrowth, resprouting or reoccurrence of brush should be expected.
- Spot treatment of individual plants or areas will be done as needed.
- In some situations, it may be appropriate to apply a maintenance treatment, such as a prescribed burn following a previous mechanical or herbicide brush management treatment, to extend the life of the treatment.